

CREATING INCREASED MOBILITY IN A BIPOLAR DEVICE

Abstract

The mobility of charge carriers in a bipolar (BJT) device is increased by creating compressive strain in the device to increase mobility of electrons in the device, and creating tensile strain in the device to increase mobility of holes in the device. The compressive and tensile strain are created by applying a stress film adjacent an emitter structure of the device and atop a base film of the device. In this manner, the compressive and tensile strain are located in close proximity to an intrinsic portion of the device. A suitable material for the stress film is nitride. The emitter structure may be "T-shaped", having a lateral portion atop an upright portion, a bottom of the upright portion forms a contact to the base film, and the lateral portion overhangs the base film.